

# TIGERS, TOO



EXECUTIVE FUNCTIONS/SPEED OF PROCESSING/MEMORY



Impact on academic, behavioral, and social functioning  
of students with ADHD, Tourette syndrome, and OCD

**MODIFICATIONS and INTERVENTIONS**

By the authors of *Teaching the Tiger*

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## CHAPTER 5

### EXECUTIVE FUNCTIONS

Executive Functions (EF) are overlapping skills that have a direct impact on school performance, behavioral control, and social interactions. There is no current consensus on the specific processes comprising executive functions. They have been variously defined as follows:

- Executive functions require “attention to the future and comprise control processes which involve inhibition and delay of responding, maintenance of anticipatory set/preparedness to act, and planning of sequences of selected actions. Efficiency and productivity are observable outcomes of these constructs.” (p. 266) (1)
- EF involve “selective and sustained attention, inhibition of verbal and nonverbal responses, strategic memorization, self-monitoring, planning and sequencing of complex behaviors, and management of time and space.” (p. 307) (2)
- “The executive functions consist of those capacities that enable a person to engage successfully in independent, purposive, self-serving behavior.” (p. 42) (3) EF comprise four components:
  - a) Volition – capacity to understand needs and wants, to generate a goal, and to establish an “intention” to carry out the goal.
  - b) Planning – ability to identify and organize the steps and materials needed to carry out the goal, consider alternatives, and make decisions.
  - c) Purposive Action – ability to put the plan into action, be flexible and shift the course of action as needed.
  - d) Effective Performance – ability to self-monitor and self-correct.
- Executive function is “the ability to maintain an appropriate problem-solving set for attainment of a future goal. This set can involve one or more of the following:
  - a) intention to inhibit a response or defer it to a later more appropriate time,
  - b) strategic plan of action sequences,
  - c) a mental representation of the task, including the relevant stimulus information encoded into memory and the desired future goal-state.” (p. 201) (4)
- “Attention is essentially a name for the integrated operation of the executive functions of the brain . . . The management system of the brain . . . involves organizing and setting priorities, focusing and shifting focus, regulating alertness, sustaining effort, and regulating the mind’s processing speed and output. It also involves managing frustration and other emotions, recalling facts, using short-term memory, and monitoring and self-regulating action.” (pp. 12, 14) (5)
- Executive functions are neurological control or self-regulatory functions that organize and direct all cognitive activity, emotional response, and overt behavior when confronted with new, unfamiliar problem-solving situations. EF include “ability to initiate behavior, inhibit competing actions or stimuli, select relevant task goals, plan and organize a means to solve complex problems, shift problem-solving strategies flexibly when necessary, and monitor and evaluate behavior.” (p. 1) (6)

## Section I

For the purposes of this handbook, executive functions are considered to include the following:

### **Problem Solving (Tasks/Activities/Situations)**

#### **Goal Setting**

#### **Planning**

#### **Proposal/Analysis (Ideas/Solutions/Strategies)**

#### **Prioritization**

#### **Organization/Sequencing**

#### **Time Management**

### **Flexibility (Cognitions/Behaviors/Emotions)**

### **Initiation/Execution (Tasks/Activities)**

### **Self-Monitoring/Use of Feedback/Self-Correction**

- Research studies suggest that executive functions follow a developmental course that begins in childhood and continues through early adolescence. The most significant age-related development occurs in the 5-8 year range with more moderate changes during 9-12 years. Mastery of most functions is achieved by adolescence. The course of EF development is considered consistent with the maturation of the brain. (7, 8, 9, 10)
  - Goal setting skills gradually develop until 11-12 years.
  - Simple planning skills may be observed as young as 5-6 years, but continue to develop through adolescence.
  - Ability to organize and use strategies is achieved by 11-13 years.
  - Flexibility reaches maturity by late childhood (8-10 years).
  - Maturation of self-monitoring is attained by 9-12 years.

**Problem Solving (Solution of Tasks/Activities/Situations)** – ability to define the nature of a problem; set a goal; propose strategies; prioritize, organize, and sequence the steps/skills/materials needed to achieve the goal; and estimate and allocate the time needed to accomplish the goal.

*Behaviors associated with effective and efficient problem solving:*

#### **Goal Setting**

Examining/identifying/analyzing demands of task/problems/situations

Understanding what needs to be accomplished

Anticipating/foreseeing/predicting outcomes of future tasks/activities/situations

Setting realistic goals

#### **Planning**

##### **Proposal/Analysis (Ideas/Solutions/Strategies)**

Formulating spontaneously ideas/solutions/strategies for solving tasks/problems/situations

Identifying/predicting cause-effect/solutions to problems

Assessing best strategy for accomplishing goals associated with tasks/activities/situations

##### **Prioritization**

Determining importance of various ideas/tasks/activities

Judging essential from nonessential information

**Organization/Sequencing**

- Organizing thoughts/actions/behavior
- Analyzing/breaking down/ordering steps needed to complete tasks/assignments/long-term projects
- Using strategies to perform tasks/activities and solve problems
- Following steps needed to accomplish tasks/assignments/problems
- Using a structured approach when learning new information/studying
- Interpreting multi-step explanations/instructions
- Organizing time/space/materials/belongings

**Time Management**

- Estimating time accurately
- Recognizing how long it takes to complete assignments/tests/homework/reports/projects
- Allocating enough time to complete assignments/reports/projects
- Structuring time when confronted with numerous tasks to be completed
- Knowing when to start tasks/assignments/solve problems in order to finish in the allotted time
- Working neither too quickly nor too slowly
- Accomplishing most important tasks and not wasting time on unimportant activities
- Following a schedule
- Using a calendar
- Meeting due dates and deadlines

**Flexibility** – ability to adapt, change, or shift one's responses, behavior, and emotional reactions when confronted with new, unfamiliar, or unexpected tasks, activities, and situations.

*Behaviors associated with a flexible response style:*

- Generating diverse ideas
- Processing several ideas simultaneously
- Analyzing task demands/problems/situations
- Considering alternative responses/options in light of new information
- Forming new ideas/opinions
- Assessing best strategy for accomplishing goals associated with tasks/activities/situations
- Reasoning abstractly
- Making inferences
- Identifying cause-and-effect
- Envisioning or predicting outcomes
- Altering plan in order to manage changing circumstances
- Modifying behavior/trying new ways of reacting when confronted with frustration/problems
- Generalizing from one situation to another
- Adapting easily to transitions/changes in routine
- Evaluating/adapting/responding appropriately to complex, unfamiliar social situations
- Taking into consideration perspective of others (understanding teacher's/parent's/peer's point of view)

## Section I

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Once the goal has been set and the plan has been determined, the student must initiate and execute the plan.

**Initiation/Execution** – ability to begin and carry out a task or activity without prompts.

*Behaviors suggestive of proper initiation/execution:*

- Beginning tasks/activities easily and at appropriate time
- Initiating tasks/activities even when considered uninteresting or “BORING”
- Finishing tasks/activities within a reasonable time frame
- Understanding that tasks are not finished until all details are completed and work is turned in

Execution of the plan requires continual **monitoring, use of feedback, and editing** so that changes can flexibly be made as needed.

**Self-Monitoring** – ability to identify and evaluate one’s own performance and behavior before, during, and after a task, activity, or situation.

*Behaviors demonstrating the ability to self-monitor:*

- Recognizing/acknowledging one’s own strengths and weaknesses
- Identifying mistakes while completing tasks/activities/socializing
- Asking for help when needed
- Perceiving the impact of one’s own behavior on self/others

**Use of Feedback** – ability to use feedback to correct mistakes and adjust behavior.

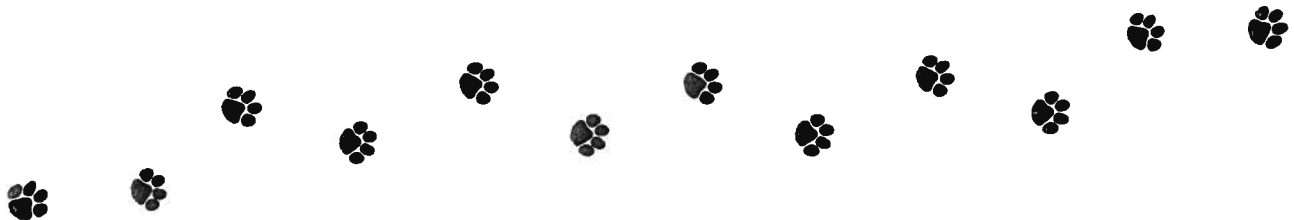
*Behaviors reflecting the utilization of feedback:*

- Responding appropriately to positive reinforcement (rewards)
- Accepting feedback from teachers/parents/peers
- Altering behavior/actions in response to feedback cues
- Learning from past mistakes and consequences
- Using feedback to build self-confidence

**Self-Correction** – ability to independently correct mistakes and adjust behavior in response to monitoring and feedback.

*Behaviors reflective of the ability to self-correct:*

- Using strategies to detect and correct mistakes
- Revising/adapting responses during tasks/activities/situations
- Adapting/responding appropriately to complex/unfamiliar situations



**Goal Setting:** "What is the problem? I have difficulty recalling the steps I should use to solve division problems."

**Planning:** "I need to think of a strategy that will help me remember. Which division strategy should I choose?"

**Proposal/Analysis of Solutions:** "I can use 'Daddy, Mother Sister, Brother' or 'Dirty Marvin Smells Bad.' I have a hard time remembering the sequence of the first strategy so I think the best one might be 'Dirty Marvin Smells Bad.'"

**Organization/Sequencing:** "First is 'Dirty' – So I Divide. Second is 'Marvin' – So I Multiply. Next is 'Smells' – I Subtract. Finally is 'Bad' – I Bring down."

**Time Management:** "I need to finish the assignment in 30 minutes. That means I have 3 minutes to complete each problem."

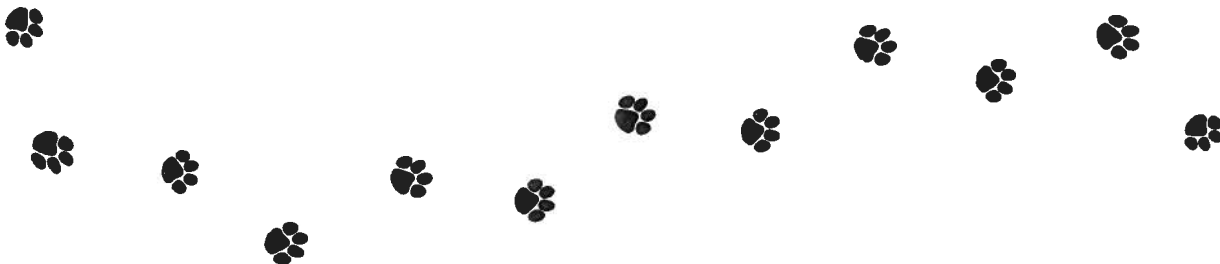
**Initiation/Execution:** "I need to get started and finish my assignment."

**Self-Monitoring:** "Am I following all the steps of the strategy in the right order? Am I making any calculation errors?"

**Use of Feedback:** "The last time I tried to solve division problems I made many errors. I kept adding when I should have been subtracting. I need to check."

**Self-Correction:** "Oh, I added here instead of subtracting. I'll correct this error."

Figure 5.1. Example of Intact Executive Functioning





# CHAPTER 6

## MEMORY

### SHORT-TERM MEMORY

**Immediate Memory (sensory register)** – brief recognition of verbal, visual, and/or tactile stimuli that lasts for only milliseconds. Any sensory information that does not attract attention disappears from immediate memory.

Information that is registered advances to working memory.

**Working Memory (WM)** – process by which information is temporarily held in mind while complex tasks are performed and problems solved. Working memory is often compared to the computer's Random Access Memory (RAM) that stores information "online" during processing.

- A current conceptualization of working memory posits that WM consists of four components. (1, 2, 3)
  - Verbal short-term working memory (phonological) – maintains both spoken and written materials and nameable objects. Verbal short-term memory is of limited duration (2-3 seconds) unless the information is preserved through subvocal rehearsal (whispered repetition of that which was heard or read).
  - Visual-spatial short-term memory (visual-spatial sketch pad) – temporarily stores nonverbal information.
  - Workspace or processing component (central executive) – is responsible for the coordination of attention, information in phonological and visual-spatial storage, and cognitive processing (e.g., determining what is relevant or not, forming associations, reasoning, analyzing and synthesizing information, applying strategies for encoding).
  - Integrative component (episodic buffer) – is a temporary storage space that handles the flow of information between working memory and long-term memory and is considered to also hold information not maintained in the verbal and visual stores.
- WM follows a developmental course with improvement continuing through adolescence. The development of working memory is consistent with the maturation of the brain. (4, 5, 6)
  - Recognition memory (remembering with the assistance of cues or bits of information) is fully developed by 9-10 years of age. (5, 6)
  - Verbal or phonological working memory is not fully developed until the teenage years. Subvocal rehearsal to enhance storage often is used after the age of 7-8. (6, 7, 8)
  - Visual-spatial working memory may be exhibited by students as young as 5-6 years of age, but gradually develops until early adolescence when adult levels of performance are achieved. (7, 8) Nonverbal information is increasingly changed by students into words for processing.
  - The ability to store information is age dependent. A normally developing 7-8-year-old student is able to hold in working memory 3 pieces or chunks of information, an 11-year-old 4-5 items, and a 15-year-old 7 chunks. (4, 9)

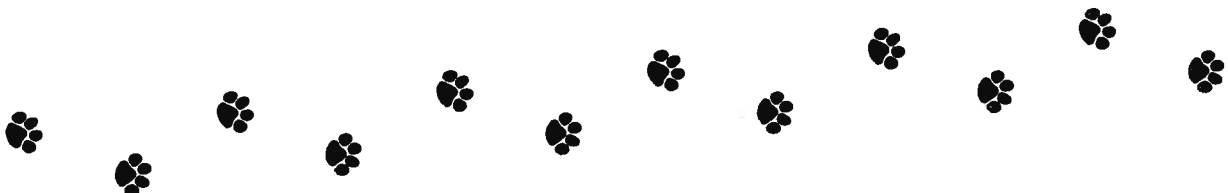
## Section I

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- The ability to both store and process information depends on the familiarity and complexity of the WM tasks. Performance on tasks that require minimal storage and processing (remembering and reproducing short lists of words or numbers) develops at an earlier age than on those that demand considerable maintenance and manipulation (remembering information presented in reading passages or math word problems and then summarizing the material or calculating the answers to the problems). (6, 9) The ability to store and process unfamiliar and complex tasks is not fully developed until late adolescence. (5, 6)
- Working memory is limited in capacity. Its resources may be diminished by either the storage or processing component. If a complex task demands effortful processing, less space is available for storage. Conversely, as more storage is required to hold information in mind, less workspace is available. Intact attention, adequate processing speed, automaticity of skills, strategy use, and speed of retrieval reduce the need to remember and enhance the capacity to perform cognitive tasks. When the amount of information exceeds capacity, any new information replaces or deletes what was originally there.
  - ❁ *The amount of storage and processing space available is different for each student.*
- Speed of processing significantly impacts working memory performance. (4)
- The ability to hold and process complex or unfamiliar information is time limited. Information is stored just long enough to process or carry out a task or activity.
- Working memory is affected by the type of content being processed. If the student has a strength in a particular area, the student will be able to efficiently and effectively maintain and process information presented in that modality.
- WM impacts the majority of skills that comprise executive functions. On the other hand, executive functions significantly influence working memory skills.

*Executive functions requiring/influencing working memory:*

Analyzing task demands  
Considering the outcomes of future tasks/activities  
Setting goals  
Planning ahead  
Generating/evaluating different alternatives to achieve goals  
Considering/predicting consequences of responses/behavior  
Drawing conclusions/making decisions  
Processing/solving tasks with several parts or steps  
Using strategies  
Thinking about and responding to positive and negative feedback and adjusting responses/behavior accordingly  
Generalizing (carrying over) to other situations  
Being aware of the passage of time





## IMPULSIVITY

### (ACTING BEFORE THINKING)

*The following behaviors serve as general indicators. The student will not exhibit every characteristic listed. These behaviors may also be indicative of other problems.*

#### Impact on Behavioral/Emotional Responsiveness

- Being distracted by auditory/visual/tactile/olfactory (smell) stimuli
- Having difficulty waiting in line and taking turns
- Being unable to inhibit inappropriate behavior
- Neglecting to ask "What if?"
- Having difficulty learning from consequences of behavior
- Demonstrating inability to use internalized speech to follow rules/control behavior/solve problems
- Having difficulty feeling satisfied
- Needing instant gratification ("I have to have it NOW!")
- Engaging in risk-taking behaviors
- Being unable to regulate emotions (too high/too low)
- Having difficulty separating thoughts from feelings
- Being easily irritated
- Having low tolerance for frustration/stress/disappointment
- Reacting with anger to unanticipated situations (e.g., reacting negatively when unable to be first)
- Responding too quickly and strongly to criticism
- Experiencing emotional outbursts
- Giving up/quitting when confronted with stressful tasks and activities

#### Impact on Academic Functioning

- Doing things without planning/organizing before starting
- Doing the first thing that comes to mind
- Failing to delay/inhibit before acting/speaking (blurting out/interrupting)
- Talking during group activities/while working on assignments
- Starting tasks/activities without fully understanding instructions
- Having difficulty following directions
- Answering question before entire question has been posed
- Impulsively interrupting lesson with inappropriate humor
- Rushing through tasks/activities without stopping to think about them
- Making careless errors

**ADHD** involves deficits in self-regulation and inhibition of behavior. The prevalence of impulsivity has been identified in approximately three-fourths of clinic-referred students with **ADHD-only**, one-third of students with **TS plus ADHD**, and one-tenth of the students with **TS-only**. (1) The presence of more severe ADHD and OCD symptoms puts the student with **TS** at risk for inhibitory dysfunction. (5) The student with **OCD** is often unable to inhibit irrelevant and unwanted thoughts and responses.

#### Interventions

- Ignore impulsive behavior as much as possible. (2)
  - ✿ *Do not expect perfection. An expectation for perfect behavior makes the student more frustrated and exacerbates impulsivity.*

### Section III

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- Implement interventions that reduce impulsive behaviors. (2)
  - Address only those behaviors that disrupt and annoy other students (e.g., interrupting or intruding into ongoing games, grabbing objects from others).
  - Suggest using a self-talk strategy. Self-directed speech reduces impulsivity, slows down responding, and provides time for objectively evaluating tasks and situations before reacting.
  - Place a simple visual cue, such as a picture of a reward on top of the desk or inside the notebook to remind the student to stop and think before acting.
  - Positively reinforce behaviors that reflect appropriate impulse control.
  - Compliment other students for self-regulating their behavior rather than continuously correcting the student.
- Assign shorter tasks with a criterion for accuracy if the student rushes through classwork.
- Eliminate incentives for completing assignments quickly (e.g., free-time, computer use).
- Teach turn-taking routines. (2)
  - Be aware that the neurology associated with **ADHD** may make the student feel that time is moving excessively and unbearably slowly. When the student becomes impatient, bored, and frustrated with a seeming delay, interruptions become difficult to inhibit.
  - Practice turn-taking in structured, teacher-directed lessons.
  - Minimize problems with interrupting and waiting one's turn by assigning the student to a small group in which there are frequent opportunities to interact.
  - Explain to the student who tries to dominate conversations or control games that others often become angry.
  - Discuss the nonverbal cues classmates exhibit when they are annoyed (e.g., frowning, wanting to stop playing a game, not wanting to interact socially).
  - Positively reinforce other students who demonstrate the appropriate turn-taking behavior. Always define the behavior ("I like the way John waited before taking his turn to speak.")
  - Determine the interests of the quiet, withdrawn student and arrange topic-centered activities so the student has a chance to contribute. Pose questions or ask for opinions.
    - ✿ *Notify the student in advance of the topic.*
  - Supervise group activities and be sure the reticent student has opportunities to take turns.



## Section V

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**Tics/obsessions/compulsions/underarousal/slow processing speed, inattention/impulsivity/hyperactivity, executive dysfunction, and/or memory problems frequently interfere with the ability to take notes.**

### **UNDERAROUSAL/SLOW COGNITIVE PROCESSING SPEED**

#### **Review interventions for Underarousal and Slow Processing Speed in Chapter 10.**

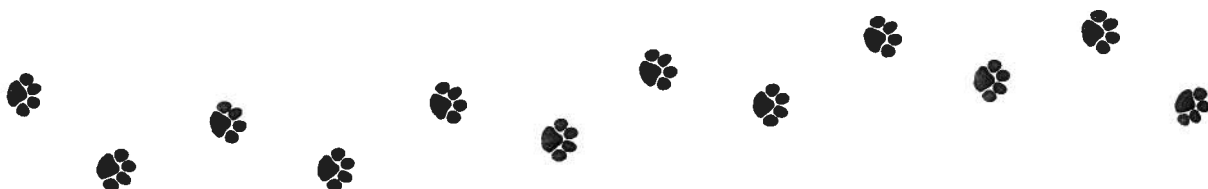
*The following behaviors serve as general indicators. The student will not exhibit every characteristic listed. These behaviors may also be indicative of other problems.*

Lacking persistence  
Struggling to grasp/understand/follow lessons  
Becoming overwhelmed when confronted with complex information  
Having difficulty keeping up with lectures and taking notes  
Asking frequently for information to be repeated

Research suggests that students with **ADHD** have processing speed deficits. (2, 6, 7) A “sluggish cognitive tempo” (SCT) or slow speed of processing characterizes one-fourth to one-half of students with **ADHD, Inattentive type**. (8, 9, 10, 11, 12) Cognitive slowing may also be associated with **TS** and **OCD**. (13, 14, 15)

#### **Interventions**

- Recognize that the student’s arousal level fluctuates throughout the school day and from one day to the next. Deregulated arousal may influence the ability to take notes.
- Schedule lessons requiring notetaking during the student’s optimal arousal time.
- Present material at a slower-than-normal rate or pause at intervals. Fast-paced instruction makes it difficult to understand, process, and record the material.
- Pause frequently to allow time between statements for information to be processed and noted.
- Repeat, rephrase, and summarize material periodically.
- Divide lessons into smaller segments. Provide a movement break or change the activity between segments.
- Supply teacher-prepared mind maps to be filled in during lessons.
- Be alert to signs of misunderstanding and confusion.



## INATTENTION/IMPULSIVITY/HYPERACTIVITY

**Review interventions for Inattention/Impulsivity/Hyperactivity in Chapter 12.**

### **Difficulty Focusing and Sustaining Attention**

*The following behaviors serve as general indicators. The student will not exhibit every characteristic listed. These behaviors may also be indicative of other problems.*

Becoming distracted  
 Daydreaming/staring into space  
 Fiddling/doodling during notetaking  
 Getting up from desk repeatedly  
 Becoming quickly bored/disinterested in taking notes  
 Needing constant reminders to keep taking notes

### **Interventions**

- Recognize that the student who is having difficulty focusing and sustaining attention will need more assistance and structure with notetaking than other students.
- Remember that the attentional and working memory problems of the student with **ADHD** may make it difficult to hold information in mind long enough to process and record it.
- Determine whether the inability to sustain attention when taking notes is modality-specific (verbal or visual) or content-specific (e.g., reading, writing, math, literature, science, history).
- Include many visual cues (e.g., highlighting, bullets, circles, letters, numbered sequences).
- Repeat information frequently to allow for lapses in attention.
- Permit questions to be asked during the lesson.
- Use cue words or filler sentences to attract attention before imparting important information (e.g., “Listen,” “Ready,” “What I’m going to say next is important.”)
- Instruct the student to pay attention and “listen” for key information such as who, what, when, where, how, and why.
- Periodically pause and request that the information be paraphrased or summarized.

## EXECUTIVE DYSFUNCTION

**Review interventions for Executive Dysfunction in Chapter 13.**

### **Difficulty Prioritizing**

*The following behaviors serve as general indicators. The student will not exhibit every characteristic listed. These behaviors may also be indicative of other problems.*

Noting minor details and not including main ideas  
 Recording irrelevant information  
 Trying to take verbatim notes

## Section V

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### Interventions

- Preview information prior to starting lessons.
  - Stress what will be most important about the material to be presented (answers to questions, main ideas, related facts).
  - Cue listening for who, what, when, where, how, and why.
  - Prepare a list of questions assessing key concepts that will be asked after the lesson. Have the student record the answers.
- Make sure the student has a strategy for identifying main ideas and important details.
  - Emphasize listening for cue words and phrases that signal key concepts and essential facts (e.g., "The main point is \_\_\_\_." "This is important \_\_\_\_." "Remember \_\_\_\_." "There are three important ideas \_\_\_\_." "In summary, \_\_\_\_." "You will need to know this for the test \_\_\_\_.").
  - Indicate that important information is often repeated.
  - Stress listening carefully to information that is presented in alphabetical or numerical order.
  - Hand out copies of the charts, definitions, graphs, tables, or formulas that are written on the board, overhead transparency, or computer generated slide.
- Omit information that is unnecessary for understanding.
- Exclude repetitious information.
- Summarize key ideas frequently.
- Supply a lettered or numbered outline or graphic organizer indicating main ideas. Ask the student to add important details.

### Difficulty Organizing/Sequencing

*The following behaviors serve as general indicators. The student will not exhibit every characteristic listed. These behaviors may also be indicative of other problems.*

Producing disorganized, illegible notes  
Taking notes that are difficult to understand  
Putting the wrong information into the notes

The key to good notetaking is organization. Students with **ADHD** frequently are disorganized in their approach to notetaking.

### Interventions

- Recommend that the parents purchase an 8 ½" x 11" loose-leaf notebook with sufficient lined pages for notetaking.
  - Divide the notebook into tabbed sections, one color-coded section for each course. Be sure to use the same color coding for all materials associated with a specific academic subject.
  - Demonstrate how supplemental materials can be filed, information inserted and deleted, and pages re-sequenced.

- Consider using a modified Cornell Notetaking Technique. (16) (Appendix p. 400)

Suggest that the student:

- put name, date, page number, and topic being discussed at the top of the page.
  - ✿ *Notes often get disorganized, torn out, or misplaced. By dating and numbering the pages, they can be put back in the correct order.*
- fold or draw a vertical line 2 ½ inches from the left side of the paper.
- record in the large right-hand column words and phrases that express main ideas and important details. Do not try to write every word that is spoken.
- take notes on only the front of the paper so that the pages can be placed side by side when studying.
- skip lines to emphasize changes in ideas/topics and insert additional information.
- leave blank spaces with question marks when information is missed.
- learn and use strategies to increase notetaking speed. (Appendix p. 401)
  - abbreviate words (e.g., "&" for "and," "@" for "at," "w/" for "with," "etc." for "etcetera").
  - shorten words by eliminating the final letters (e.g., "imp" for "important," "info" for "information," "min" for "minimum," "max" for "maximum").
  - omit vowels and keep only enough consonants for word recognition (e.g., "bkgd" for "background," "wrt" for "write," "yrs" for "years," "vs" for "versus").
- following the lesson, reduce the notes to key words and phrases and record them in the left-hand column.
- keep the lessons in reverse chronological order (latest first, oldest last).
- Teach and provide practice notetaking.
  - Deliver short, organized lectures that cover familiar topics.
  - Emphasize key concepts and prompt the student to write them down.
  - Use a variety of visual aids.
  - Following the lecture, review notes and compare with a completed model.

### INITIATION/EXECUTION DIFFICULTIES

*The following behaviors serve as general indicators. The student will not exhibit every characteristic listed. These behaviors may also be indicative of other problems.*

Appearing hypoactive/lacking energy/uninterested when required to take notes

Not knowing where/when to start taking notes

Fiddling with items in notebook/desk when needing to take notes

Avoiding taking notes, even when knowing failure to do so will result in negative consequences

Needing reminders to start/continue taking notes

## Section V

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### Interventions

- Divide oral lessons into short, manageable segments. The student may become discouraged and frustrated when required to take notes during a long lecture and then be unable to overcome the inertia caused by feeling overwhelmed. Gradually increase the length and difficulty of the lesson as the student demonstrates success.
- Assist completion of the first one or two notes to make sure the student knows how to take notes.

## MEMORY PROBLEMS

Review interventions for Memory Problems in Chapter 14.

### SHORT-TERM MEMORY PROBLEMS

#### *Difficulty with Working Memory*

*The following behaviors serve as general indicators. The student will not exhibit every characteristic listed. These behaviors may also be indicative of other problems.*

Having difficulty listening to new/complex verbal material while taking satisfactory notes  
Appearing confused during oral lessons  
Becoming frustrated/overwhelmed when confronted with notetaking  
Asking excessive number of questions  
Needing repetition of phrases/sentences/instructions/information  
Losing information heard at beginning of teacher's explanation/lesson while listening to rest of it  
Being unable to paraphrase/summarize verbally presented information

Research suggests that students with **ADHD** have difficulty with listening comprehension tasks that require working memory, even though their ability to understand incoming information is normally developed. (17) Students must simultaneously pay close attention, remember the material, summarize accurately, write quickly in an organized and legible form, and continue to process the ongoing lecture.

### Interventions

- Determine the student's auditory memory span. Do not present information in excess of the verbal memory span as the student may have difficulty maintaining it in working memory.
  - 🐾 *The ability to process information in working memory decreases significantly when the student is trying to process more than the memory span can retain. Notetaking becomes impossible.*
- Assign a chapter in the textbook for homework before it is taught in class. This familiarizes the student with the key points and terms that will be presented during the lesson.

Suggest that the student:

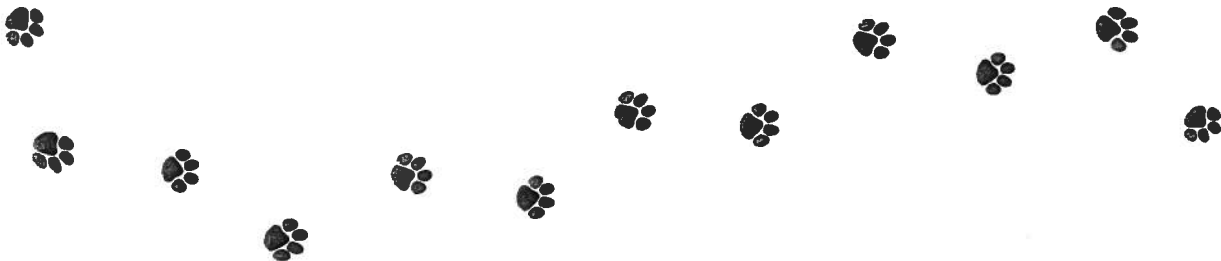
- review the vocabulary to be used during the lesson.
- highlight the main ideas and details.
- think about and connect the information to what is already known about the subject.
- generate questions as the material is read.



- Stress reviewing notes from the previous lessons during homework sessions.
- Design well-organized lessons that are easy to understand and follow.
- Present ideas and explanations related to the text. Omit extraneous information.
- Slow down the rate of presentation to allow time for writing.
- Pause and ask students in the class to summarize the material. This provides more time for processing the information, writing, and/or checking the accuracy of the notes.
- Write key concepts on the board, an overhead transparency, or an interactive whiteboard.
  - Use different colored pens or pencils to highlight or underline important points.
  - Frame main points with circles, squares, rectangles, and/or ovals.
- Modify notetaking requirements if the student has working memory problems.
  - Use alternate forms of notetaking.
    - Supply teacher-prepared mind maps or outlines identifying main ideas and related subtopics. Provide space for filling in facts, definitions, etc.
    - Furnish fill-in-the blank teacher-created notes or lists of details to be completed with the key concepts.
    - Furnish a graphic organizer to be completed during the lesson.
    - Provide incomplete charts, graphs, diagrams, and illustrations.
- Use strategies that enhance the workspace available in working memory. (p. 36)
- Provide a few minutes after the lesson for the student to read over the notes and fill in the information that was missed, make sure the notes are understandable, and correct illegible handwriting.

Suggest that the student:

- ask for further clarification from the teacher or reread the text if the notes are unclear.
- borrow notes from another student to clarify missing information or illegible writing.



- Recommend that the parents intervene if the student becomes overwhelmed.
  - *Sometime **ADHD** medication has worn off during homework time and can make cognitive tasks quite difficult.*

Suggest that the parents:

- associate anxiety and anger with distress or lacking skills.
- provide a movement break before trying again.
- offer a protein snack to increase arousal and improve attention.
- Teach the parents how to intercede when acting-out behavior interferes with the rest of the family. (pp. 94-95)

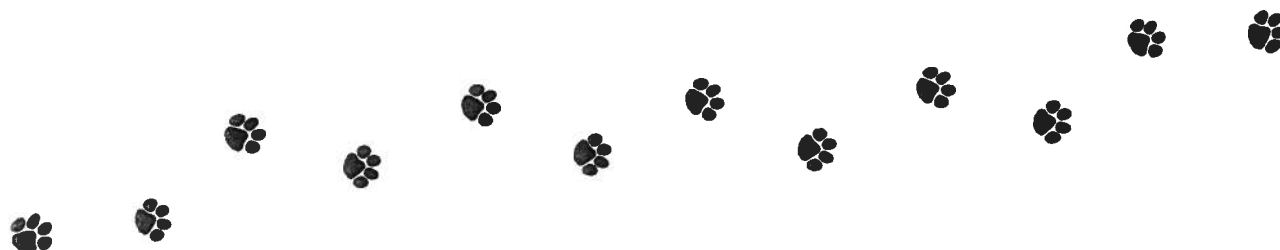
## EXECUTIVE DYSFUNCTION

Review interventions for Executive Dysfunction in Chapter 13.

### IMPAIRED PROBLEM SOLVING

(Tasks/Activities/Situations)

- Provide a template of a problem solving strategy such as “**GET A CLUE**” or “**PLAN**” to enhance the ability to do homework. Be sure the strategy includes steps for goal setting, planning (generating ideas, solutions; analyzing proposed ideas, solutions; prioritizing; organizing; sequencing; managing time), initiating, completing, and editing. (Appendix pp. 374–375)
- Model and demonstrate how to use problem solving strategies. (p. 108)



## Section V

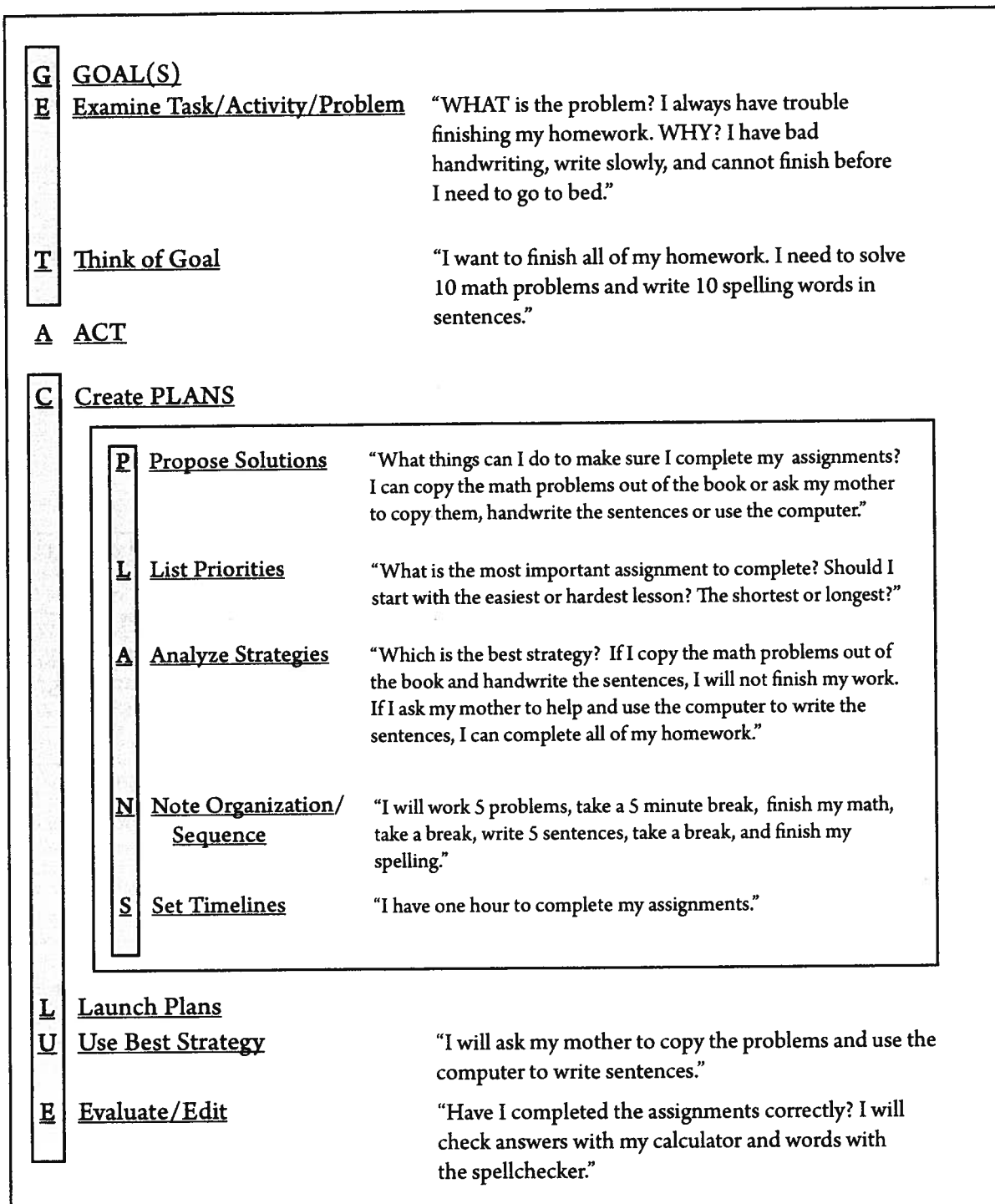


Figure 23.2. GET A CLUE – Cognitive strategy used with student who had difficulty completing homework

Some students may not be able to follow the complexity of this strategy unless taught in incremental steps that must be mastered before continuing to the next step. Other students may need to learn a more simplified version "PLAN." If so, use "GET A CLUE" as a structure for discussing and teaching ways to solve tasks, activities, and problem situations.

<b>P</b>	<b><u>Propose Goal</u></b>	"I want to develop a plan to complete my homework. I need to solve 10 math problems and write 10 spelling words in sentences."
<b>L</b>	<b><u>List and Analyze Strategies</u></b>	"What things can I do to make sure I complete my homework? I can copy the math problems out of the book or ask my mother to copy them, handwrite the sentences or write them on the computer. If I copy the math problems out of the book and handwrite the sentences, I will not finish my homework. If I ask my mother to copy the math problems and I use the computer to write the sentences, I think I can complete all of my work."
<b>A</b>	<b><u>Apply Best Strategy</u></b>	"I will ask my mother to copy the problems and I will use the computer."
<b>N</b>	<b><u>Notice Errors and Edit</u></b>	"Have I solved the math problems correctly? I will check the answers with my calculator. Oh! I need to redo this one! Have I spelled the words correctly? They are all correct."

Figure 23.3. PLAN – Cognitive strategy used with student who had difficulty completing homework

### Difficulty Setting Goals

*The following behaviors serve as general indicators. The student will not exhibit every characteristic listed. These behaviors may also be indicative of other problems.*

Using trial-and-error approach to completing homework  
 Overlooking the need to set goals for completing homework effectively and efficiently  
 Being unable to generate solutions to homework problems

### Interventions

- Teach the use of the strategy for setting goals.
- Have the student self-evaluate the skills required to complete homework successfully, identify strengths and weaknesses, and determine the skills which need improvement.
- Recommend that the parents help the student set goals before beginning homework.
- Provide the parents with templates of "GET A CLUE," "PLAN," or another homework strategy for setting goals. (Appendix pp. 374–375)

### Difficulty Planning

#### Difficulty Proposing and Analyzing Ideas/Solutions/Strategies

*The following behaviors serve as general indicators. The student will not exhibit every characteristic listed. These behaviors may also be indicative of other problems.*

Lacking skills to generate/brainstorm ideas/solutions/strategies for solving homework problems  
 Using trial-and-error approach to problem solving  
 Having trouble identifying the who, what, when, where, how, and why of the problem  
 Needing help to analyze proposed strategies to carry out goal

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### Interventions

- Provide assistance in generating as many practical ideas as possible (e.g., “I will make a ‘To Do’ list and put it in my daily, weekly, and monthly calendars, ask an adult to copy assignments before completing them, use the computer and email lesson to teacher.”).
- Discuss both the positive and negative outcomes and consequences of each idea.
- Choose the best strategy.

### Difficulty Prioritizing

*The following behaviors serve as general indicators. The student will not exhibit every characteristic listed. These behaviors may also be indicative of other problems.*

Misjudging significance of homework assignments  
Spending too much time on unimportant activities  
Being unclear as to why homework should be considered a priority  
Having difficulty determining most important reading/math/writing assignment to be completed  
Struggling to decide what material to study for tests

### Interventions

- Discuss the value of homework.
  - Explain that completing homework increases learning and produces good grades.
  - Show how school achievement and good grades help the student get “great adult toys” (e.g., car, computer, large screen TV).
- Teach the student how to prepare homework “To Do Lists” that prioritize, organize, and consolidate all of the essential tasks that need to be carried out each day, week, and month. (p. 121)

✿ *A “To Do List” will help reduce the demands placed on working memory to remember several different assignments.*

Ask the parents to help the student:

- list all the homework assignments that must be completed for that day, week, and month.
- separate important tasks and activities from time-consuming unimportant ones.
  - ✿ *Check to see if priorities are correct.*
- divide difficult tasks and assignments into several smaller ones and add them to the list.
- include due dates and steps for completing long-term assignments and studying for tests.
- highlight steps for completing book reports in one color, test dates in another color, etc.
- list special events such as athletic games, club meetings, holidays, birthdays, family events, etc.
- rank order and number the sequence in which the tasks should be completed. Students differ in their preferences. Some prefer beginning with the most difficult or tedious assignment. Others choose to start with an easy assignment, complete a more difficult task, and end with another easy assignment.
- rewrite the list in priority order.

### Difficulty Organizing/Sequencing

*The following behaviors serve as general indicators. The student will not exhibit every characteristic listed. These behaviors may also be indicative of other problems.*

- Overlooking need to use assignment book
- Neglecting to take home needed books/materials
- Becoming overwhelmed by large homework assignments and unable to break assignments into manageable segments
- Finding it impossible to sequence homework tasks
- Using a disorganized approach to completing homework
- Having difficulty organizing materials/belongings/backpacks
- Forgetting to return books/materials to school

### Interventions

- Be aware that organizational skills tend to be better developed in a classroom that provides structure and routine regarding homework assignments.
- Require the use of an assignment book.
- Use the assignment book as a communication log with the parents. (2)
  - ✿ *Email or fax comments when the use of the assignment book is unsuccessful.*
  - Initial that the homework was copied correctly.
  - Ask the parents to initial that the homework was completed. This will prevent unfair accusations if the work was misplaced between home and school.
  - Keep an accurate record in the log if weekend privileges are being awarded for homework completion. A Friday summary report can determine what rewards a student can earn (e.g., watching television, using the computer, staying up late, driving, receiving extra allowance).
- Establish a classroom procedure for assigning homework.
  - Post written homework assignments in the same location every day.
    - ✿ *Avoid giving oral directions as students leave class.*
  - Set a specific time for writing down assignments and gathering materials. Follow the same schedule every day.
    - ✿ *Schedule enough time to copy homework assignments accurately.*
- Intervene if the student is having difficulty recording homework assignments accurately.
  - ✿ *Always provide written instructions if the student has a handwriting problem or ask a "buddy" to copy the directions on lined NCR (Non Carbon Replica) paper to be placed in the student's assignment book.*
  - Give the student a copy of the homework assignments.
  - Suggest tape recording homework assignments.
  - Post homework assignments on the school or class website.
  - Provide the names and phone numbers of two or three classmates who are willing to discuss the assignments with the student.

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- Recommend using the Internet to obtain information regarding assignments from other classmates.
- Email parents regarding homework assignments, what is expected from the student, due dates, etc.
- Ask the parents to provide self-addressed and stamped envelopes to have the class syllabus, deadlines, and instructions for long-term assignments mailed home.
- Help the student remember to take the needed materials home. (2)
  - Suggest keeping an extra set of books at home.
  - Recommend that the parents supply the study area with necessary materials (paper, pencils, pens, highlighters, paper clips, stapler, scissors, tape, glue, ruler, calculator, dictionary, thesaurus) to eliminate the need to look for the items to put in the bookbag.
  - Provide time throughout the day for organizing books and materials needed for the homework assignments.
  - Color coordinate textbooks, folders, and assignment sheets so that it is easier to find materials (e.g., yellow math book cover, yellow math notebook, yellow assignment sheet).
  - Have a separate, color-coded folder for permission slips and teacher-parent communications.
  - Insist that the assignment book and homework folders containing the work sheets be placed in the front of the notebook.
  - Allow the student to leave class two to three minutes early. The extra time will enable the student to go to the locker to calmly pack the school bag without the distraction of other students. This will increase the likelihood that the necessary items do go home.
  - Have an aide or resource teacher monitor whether the homework instructions are correctly recorded in the assignment notebook and check the book bag to make sure the needed books and materials are included.
  - Conduct a weekly cleanup of the folders, notebook, and bookbag.
- Suggest that the parents have a large container into which the student can put all school materials upon arriving home so messages from the teacher, permission slips, library cards, and other school communications will not be overlooked.
- Recommend creating a study environment that allows the student to concentrate and is conducive to work completion.

Suggest that the parents:

- designate a quiet study area that is free of distractions such as televisions, video games, CD players, and telephones.
  - insist that all family members engage in quiet activities during homework time. This is particularly important if the student lives in a small, noisy household.
  - permit the student to select and to listen to music to block out the noises that are distracting in the home. However, if the privilege is abused (decline in grades, failure to complete homework), the privilege is lost.

✿ *The student should not listen to music on the radio as the intermittent interruptions may be distracting.*



- allow the student to choose the location for doing the homework (desk, bed, kitchen or dining room table, floor). If the work is not finished, all assignments must be completed in a specified location. After a period of time, permit the student to try again. (2)
- take into consideration the student's sensory preferences when choosing the study place. (2)

Does the student:

- study better with familiar music masking background noises?
  - prefer soft lighting to bright lighting, or incandescent lighting to florescent lighting?
  - prefer a cool room to a warm room?
  - prefer a soft or hard chair, one that rocks or swivels?
  - prefer rocking to sitting?
  - prefer walking while reading?
  - need to snack while studying?
- Recommend designating a specific time every day to study and do homework. (2)

Suggest that the parents:

- require homework be completed before dinner. Often the student and parents are too tired to handle the demands of the homework routine later in the evening.
  - ☛ *When after-school activities interfere with doing homework, start homework as soon as possible. If activities prevent homework completion, review priorities and adjust schedule for success.*
- provide enough time (about 30 minutes) to have a snack, relax, and release energy and tics before starting homework, but not enough time to get distracted or involved in another activity that might prevent shifting focus to the homework (e.g., playing with friends, watching TV, playing a video game, IM-instant messaging).
  - ☛ *It is often difficult for the student to engage in an interesting activity and then stop and think about homework. If the student wants more time, there must be an agreement to stop immediately when called or the privilege will be denied in the future.*
- set a required amount of time for studying whether or not homework has been assigned so that studying becomes a regular routine. If the student does not have any homework or finishes the work before the designated time, the student can read for pleasure, review for tests, work on an upcoming project, or complete practice lessons. A set time will negate rushing through homework to watch TV, play a video game, or talk on the telephone.
  - ☛ *The amount of time the student should spend doing homework depends on the student's grade level. The National Education Association (NEA) recommends that students in kindergarten through the second grade have 10 to 20 minutes of homework each night. Students in grades 3 to 6 should be assigned 30 to 60 minutes of homework. The amount assigned to middle and high school students should vary depending on the subject and the course requirements (answering questions, solving math problems on a daily basis, or writing reports and research papers). (3)*

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- Encourage the parents to help structure and organize the completion of homework assignments.

Suggest that the parents:

- offer assistance in listing and prioritizing (p. 278) all tasks that need to be completed during the homework period (e.g., solving a specified number of math problems, answering history questions, completing a step needed to write a report or complete a long-term project, studying for a science test later in the week).
- help separate longer assignments into subtasks.
- make sure that breaks are scheduled between tasks.

✿ *Schedule more frequent breaks for more difficult assignments.*

- Recommend providing a structure that ensures that completed assignments are returned to school.

Suggest that the parents:

- always keep the school bag by the door through which the student leaves in the morning.
- check to make sure that the completed assignments have been placed in the color-coded homework folder in the front of the notebook.
- provide reminders to put the notebook in the school bag.
- have the student scan homework papers and submit them on the Internet when possible.

✿ *The ability to email homework assignments to the teacher increases homework completion and negates the loss of homework between home and school.*

- Establish a classroom routine for collecting homework.
  - Designate a location in the classroom for the homework to be placed.
  - Use color-coded folders to hold completed assignments.
  - Routinely remind all students at the beginning of class to turn in their assignments.
  - Discreetly cue the student to place the homework in the specified area. Gradually decrease cues as success is experienced.
  - Check completed assignments and return them as soon as possible so the student and parents can see if the work was completed satisfactorily. Make positive, corrective comments.

✿ *Returning corrected assignments and tests promptly reinforces learning.*

- Contact parents when two or three assignments have not been turned in. This will help the student keep up with the homework and not become hopelessly behind. (2)



## Difficulty Managing Time

*The following behaviors serve as general indicators. The student will not exhibit every characteristic listed. These behaviors may also be indicative of other problems.*

Having trouble organizing homework schedule and using calendar/planner  
 Being unable to create a timeline to complete long-term assignments  
 Lacking time estimation skills  
 Starting homework/long-term assignments at the last minute  
 Having difficulty allocating time to study for tests

## Interventions

- Provide instruction in time estimation for the completion of homework assignments. (p. 120)
- Suggest that the student transfer the “To Do List” (p. 121) to the daily, weekly, and monthly planners/calendars, estimating and allocating the time it will take to complete the tasks. Schedule accordingly.
  - schedule the hardest, least liked tasks early in the study session to reduce the tendency to procrastinate.
    - ✿ *The most difficult subject should not be left until last because the student may concentrate on the easier assignments and not have enough cognitive energy to finish the more difficult one.*
  - plan activities with breaks between tasks.
    - ✿ *More difficult tasks require more frequent breaks.*
  - post the “To Do List” and calendars on the wall in front of the study desk to jog the memory.
  - cross off homework assignments as they are completed to provide a sense of accomplishment.

## INITIATION/EXECUTION DIFFICULTIES

*The following behaviors serve as general indicators. The student will not exhibit every characteristic listed. These behaviors may also be indicative of other problems.*

Appearing hypoactive/lacking energy/uninterested in doing homework  
 Seeming “lazy” or “unmotivated”  
 Procrastinating/hesitating/avoiding beginning homework  
 Needing constant reminders to sit down and get started  
 Requiring repeated encouragement/direction

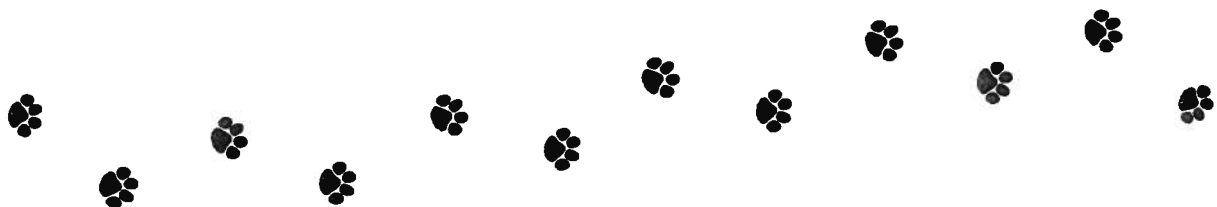
## Interventions

- Always assign homework with which the student can experience success. Ensure that the homework is at the independent instructional level (90 percent of the material is understood). (p. 64)
- Provide clearly defined, written directions so that the student understands the assignment and the parents can provide assistance, if needed. Instructions should include:
  - purpose of the assignment (e.g., practice newly learned skill, review notes, prepare for test).
  - specific directions for doing the homework.
  - estimate of time that should be spent on each assignment.

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- description of the type of work expected (e.g., short answers, complete sentences, written or oral report, poster).
- list of the materials needed to complete the assignment.
- due date(s).
- grading criteria.
- Determine whether the student understands the instructions and feels capable of performing the homework assignment. (2)
  - ✿ *Often the teacher and parents are unaware that the student is not willing to admit that the work is too difficult to perform. This is particularly evident in middle and high school classes that expect significant amounts of increasingly difficult homework assignments to be completed independently.*
  - Ask for the directions to be restated by the student before sending assignments home.
    - ✿ *Avoid using this approach in front of peers.*
  - Have the student begin the homework assignment in class.
  - Check the accuracy of the first few answers.
- Allow the student to select between two or three different homework alternatives (e.g., using a computer program to reinforce learning an academic skill, listening to a book on tape, watching a TV program or video related to the topic being studied, preparing a demonstration or oral report). This will increase the likelihood that the student will work on and complete the homework.
  - ✿ *Be sure the choices are of equal difficulty and require the same amount of work so that the student does not learn to opt for the least challenging assignment.*
- Suggest that parents help the student get started by discussing the different assignments that need to be completed.
- Recommend that the parents provide assistance with the first two or three problems to make sure the assignment is understood and can be completed successfully. (2)
- Stress the importance of reminding the student that the homework must be finished before being allowed to go outside and play with friends, watch TV, play electronic games, etc.
- Instruct the parents to offer an enthusiastic, clearly stated comment regarding the student's initiation to task and work completion ("I was impressed with the way you started and finished your homework without any reminders!"). (2)



## IMPAIRED SELF-MONITORING/USE OF FEEDBACK/SELF-CORRECTION

*The following behaviors serve as general indicators. The student will not exhibit every characteristic listed. These behaviors may also be indicative of other problems.*

Being unaware of losing focus and concentration  
 Missing important details  
 Making careless errors  
 Neglecting to use strategies to monitor homework  
 Continuing to work even though the materials are not understood  
 Lacking skills to know how and when to self-correct  
 Neglecting to stop and clarify thinking and then continue working  
 Forgetting to use self-questioning to determine if understanding/completing assignment correctly  
 Making same types of mistakes even though repeatedly shown correct way to solve problems

### Interventions

- Assess the student's ability to self-monitor and self-correct homework by using materials at the instructional level (70-85 percent of the material is familiar) so that some errors will be made.
- Suggest completing homework orally. Working aloud forces the student to slow down, listen to information, and self-correct.
- Teach the use of self-questioning to monitor assignments.
  - Help generate questions such as:
    - "What is the homework? Did I copy it correctly? Do I need to look on the class web site?"
    - "Do I know how to do it?"
    - "What does this word/phrase/sentence/problem/direction mean?"
    - "Does this make sense to me?"
    - "I don't understand my homework. What should I do? Should I ask someone to help me?"
    - "Have I finished all of my homework?"
    - "Have I made any mistakes?"
    - "Is there something different that I should do next time?"
    - "Did I put the work in my notebook? Is the notebook in my bookbag? Is my bookbag by the door?"
  - Prepare a list of the student's self-generated questions to serve as a visual guide.
  - Suggest placing the list of questions in the student's notebook.
- Recommend that the parents emphasize and cue the use of self-monitoring strategies that produced correct answers (e.g., "Be sure to read the instructions and underline important words before starting." or "Remember to work more slowly and use the cue card to follow the steps of the problem.").
- Review homework assignments with the student and analyze why answers were correct or incorrect (e.g., "I didn't read the directions." or "I was working too fast and forgot to use the cue card to solve the problem.").

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- Remind the parents that the student will rarely complete homework without making mistakes. Suggest providing positive reinforcement for work effort and completion.

### MEMORY PROBLEMS

Review interventions for Memory Problems in Chapter 14.

#### SHORT-TERM MEMORY PROBLEMS

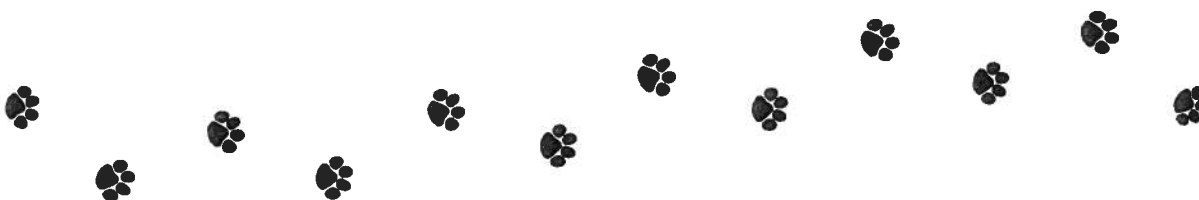
##### *Difficulty with Working Memory*

*The following behaviors serve as general indicators. The student will not exhibit every characteristic listed. These behaviors may also be indicative of other problems.*

Having trouble holding directions in memory when homework assignments are given orally  
Having difficulty remembering steps of tasks while executing them  
Rushing through assignments in order to not forget what one is in the process of completing  
Becoming overwhelmed when task has several parts or steps  
Using trial-and-error approaches rather than strategies  
Being unable to retrieve facts from long-term while completing assignments

##### **Interventions**

- Give the student written copies of homework assignments.
- Post written directions at the beginning of the class period to give the student with handwriting problems more time to record assignments.
- Use a homework “buddy,” if needed, to write down assignments.
- Provide written directions that indicate the steps needed to complete assignments.
- Divide homework assignments into small segments.
- Recommend using a mind map or computer program to brainstorm ideas, organize, and/or recall the sequence for completing projects and solving problems.
- Suggest quietly thinking aloud while completing assignments.
- Using self-directed speech helps the student maintain information in working memory.
- Allow the use of a computer and calculator to circumvent the need to maintain information in working memory.
- Permit the parent to act as a scribe.



## CHAPTER 24

### TEST PREPARATION

- Explicitly teach study skills.
  - ✿ *Do not assume that, when students say they are “studying,” they know what studying means.*
- Give sufficient advance notice of tests to provide ample time to organize and prepare for tests.
- Create study guides which indicate the most important material to be learned.
- Point out information that is most likely to be asked on the test (specific facts, details, definitions; characters, places, events; comparison and contrast of ideas; predictions) so the student does not spend time studying content that will not be included.
- Identify the types of questions (multiple-choice, matching, true/false, fill-in-the-blank, short answer, essay).
- Review information for tests by having the students write questions for classmates to answer or write answers for which others must pose the questions.
- Indicate how the test will be graded and how much the test will count toward the final grade.
- Teach the student how to allocate and manage time prior to test taking.

✿ *Students with **ADHD** and executive dysfunction (**EDF**) typically procrastinate until the day before the test to begin studying.*

Suggest that the student:

- always write test dates in the assignment book and on the weekly and monthly calendars as they are assigned. (p. 120)
  - write reminders 1 week, 5 days, 3 days, and 1 day before tests.
  - highlight the review days and the test date.
- determine the most important information to be learned.
- decide how much time will be needed to encode the material.
- divide study sessions into several small segments with breaks in between them. The beginning and ending of each segment is remembered better than the middle. Thus, there will be more opportunities to learn the information. (p. 139)
- schedule most difficult material to be studied when the student is most alert.
- Recommend reviewing materials and class notes as part of daily and weekly study sessions. This avoids “cramming” the night before the test.
  - ✿ *There is a rapid loss of information immediately following the lesson. The more time that elapses after learning without reinforcement, the more the information is forgotten. A quick review helps ensure that learning is permanent. Studying the material at a later time requires relearning, not just reviewing. (p. 143) (1)*